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ABSTRACT

A study examined the effectiveness of the Writing-to-Read Computer Program in elementary school language arts education. The program is designed to teach children to read through interacting with a computer by learning sound/symbol relationships and by composing stories. First through fourth graders from predominantly black, urban schools and from a rural, racially integrated school were tested in vocabulary, reading recognition, reading comprehension, and language subtests of the Metropolitan Achievement Test, and in the reading, language, and spelling subtests of the California Achievement Test. Results indicated that the Writing-to-Read Program produced significant gains in language and spelling which hold up over time. However, it did not seem to influence reading ability. Traditionally, poor language skills have been seen as a detriment to normal development in reading yet the children in this study had strong language scores. Results also suggest that if these children had a whole language start in reading instruction beginning in kindergarten, the children's scores in reading would improve dramatically. (Three tables of data are included.) (PRA)

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Early Literacy Instruction with Computers and Whole Language

An Evaluation of the Writing-to-Read Computer Program with Disadvantaged Minority Children

Presenter

Barbara C. Decker, Ed.D.

Presented at the

Thirty-sixth International Reading Association
Las Vegas, Nevada

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Writing-to-Read Program Evaluation

The Writing-to-Read Computer program is a program to teach children to read through interacting with a computer by learning sound/symbol relationships and by composing stories. Children generally begin the program after they have learned the alphabet which is usually January of the kindergarten year. The ten programs are finished by the end of the first semester of first grade. The children spend 75 minutes a day in the lab accompanied by their classroom teacher who assists the lab teacher in working with the children. In three of the fourteen schools with Writing-to-Read Labs there are certified elementary teachers. The other eleven labs are attended by trained teacher aides.

Questions:

Several questions were asked about the effectiveness of the labs in the language arts program.

- Is there a significant difference in the achievement of the children in a computer lab with a certified teacher vs. a teacher's aide in charge?
- Is there a significant difference between heterogeneously grouped children who participated in the program and children who did not participate in the same school?
- Is there a significant difference in the language arts skills of children as measured the California Achievement Test at the end of third grade if they participated in the Writing-to-Read program in K-1st grade?

Hypotheses:

From these questions the following hypotheses were formed:

Hypothesis 1:

Children who completed a Writing-to-Read Program taught by a certified elementary teacher will score significantly better on the Metropolitan Achievement Test than children who attended a Writing-to-Read Program taught by a teacher's aide.

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Hypothesis 2:

Heterogeneously grouped first grade children who attended the Writing-to-Read Program at Atkins Elementary School will score significantly higher on the Metropolitan Achievement Test than the first graders who did not participate in the program.

Hypothesis 3:

Low-socioeconomic, black fourth graders who have attended the same school since K4 and who have been through the Writing-to-Read Program will score higher on their 1989 California Achievement Tests in reading, language, and spelling higher than low-socioeconomic, black fourth graders who have attended the same school since K-4 and have not attended the Writing-to-Read Program.

Subjects:

Hypothesis 1

The subjects selected to test Hypothesis 1 were the children in two first grade classrooms (n = 38) from Atkins, all first graders (n = 49) from Timmons Elementary School, and all first graders (n = 63) from Northside Elementary School (Total - 149). Atkins and Norhside are predominately black, urban schools. Timmons is a rural school that is racially integrated.

Northside has a certified, master teacher who is also a reading specialist working in the Writing-to-Read Lab. Timmons and Atkins have trained, experienced teacher's aides working in their labs. At Atkins only two of the four first grade classrooms have attended the Writing-to-Read Lab.

Hypothesis 2

The subjects selected to test Hypothesis 2 are all of the six, first grade classroom students (n + 109) who attend Atkins Elementary School. These children are predominately black student whose classrooms are heterogeneously grouped. Two first grade classroom were randomly selected last year to participate in the Writing-to-Read Program. Their scores on the Metropolitan Achievement Test were compared to the scores of the children in the four classrooms who did not attend the Writing-to-Read Lab.

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Hypothesis 3

The subjects selected to test Hypothesis 3 were all of the children at two predominately black schools who have attended their respective school every year since K4. Pine Grove Elementary School (n = 22) did not have a Writing-to-Read Program when these children attended K5 and 1st grade. The subjects who attended Newton-Smith Elementary School (n = 16) participated in the Writing-to-Read Program during their K5 and 1st grade school years. These fourth graders took their first California Achievement Test last April. The reading, language, and spelling scores were compared.

Procedure:

To test Hypothesis 1, the Vocabulary, Reading Recognition, Reading Comprehension, and Language Subtests of the Metropolitan Achievement Test were administered the first week in March to all of the first graders who have participated in the Writing-to-Read Program at Atkins, Timmons, and Northside Elementary Schools. A one way analysis of variance (ANOVA) was used to compare the test results of the three schools, and the Scheffe F-test was the *post hoc* test of choice.

To test Hypothesis 2, the two first grades who went to the Writing-to-Read Lab and the four first grades that did not participate in the computer program were compared. Their scores of the Metropolitan Achievement Test (subtests Vocabulary, Reading Recognition, Reading Comprehension, and Language) were compared using ANOVA with the Scheffe F-test the *post hoc* test of choice.

To test Hypothesis 3, a two-tailed, t-Test was used to compare scores on the 1989 California Achievement Test of students who are currently enrolled in fourth grade and had attended K4-3rd at Pine Grove Elementary School but who had not had the opportunity to participate in the Writing-to-Read Program and the same group of children who had attended Newton-Smith Elementary School where they had participated in the Writing-to-Read Program in K5 and 1st grade. The subtests that were compared were reading, language, and spelling.

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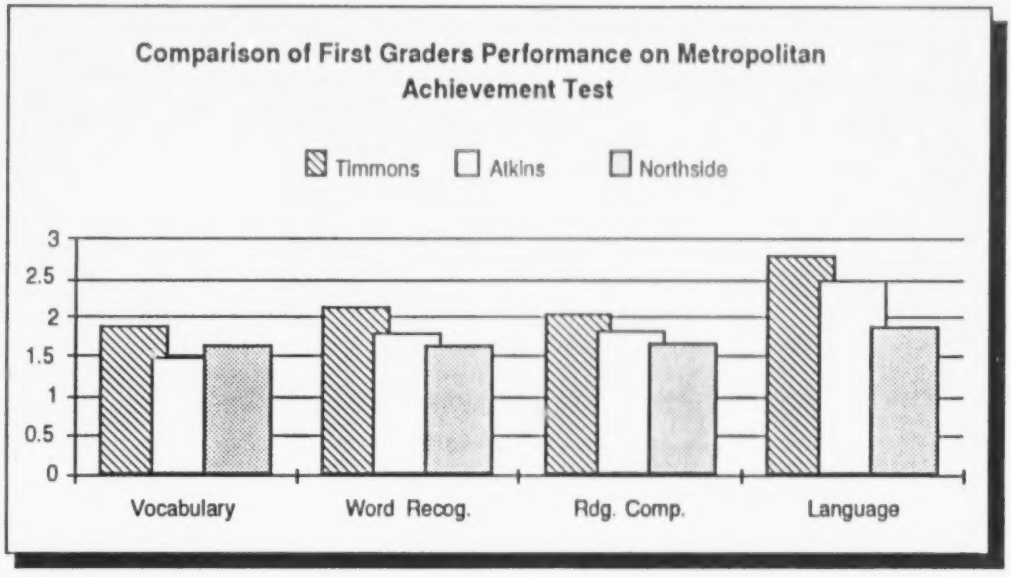
Results:

Hypothesis 1:



Vocabulary:

There was a significant difference (P = .0054) in the scores on vocabulary but the difference was not due to the teacher in the Writing-to-Read Computer Lab. Timmons children scored significantly better than Atkins children (<.01) but there were no other significant differences between schools.

Word Recognition:

There was a significant difference (P = .0018) in the scores on the word recognition subtest between the schools. Timmons children (Mean GE = 2.134) scored significantly (<.01) higher than Northside children (Mean GE = 1.624). The differences between Atkins and Timmons children and Atkins and Northside children was not significant. It should be noted that all three scored scored at grade level or above.

Reading Comprehension:

There was a significant difference (p = .0028) in reading comprehension subtests between schools. Again Timmons children scored significantly higher (<.01) than Northside children. There was no significant difference between Atkins and Timmons children and Atkins and Northside children. Again, all

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three schools scored at or above grade level.

Language:

The largest and most significant differences (p = .0001) were seen in the results of the language subtest. All three school scored above grade level with Atkins and Timmons children scoring in the range of second semester, second grade. Both Atkins (Mean G.E. = 2.547) and Timmons (Mean G.E. = 2.789) scored significantly higher (<.05) than Northside (Mean G. E. = 1.873).

DISCUSSION:

Hypothesis 1 must be rejected because Atkins and Timmons children consistently scored significantly higher than Northside children where there is a certified master teacher. The reason for the differences are due to some other variable(s). Questions which might be explored further are

- Is there a significant difference in the experiential background of the children in the three schools?
- Is there a significant difference in the quality of teaching in the three schools?
- Is there a significant difference in the parental involvement of the children at the three schools?

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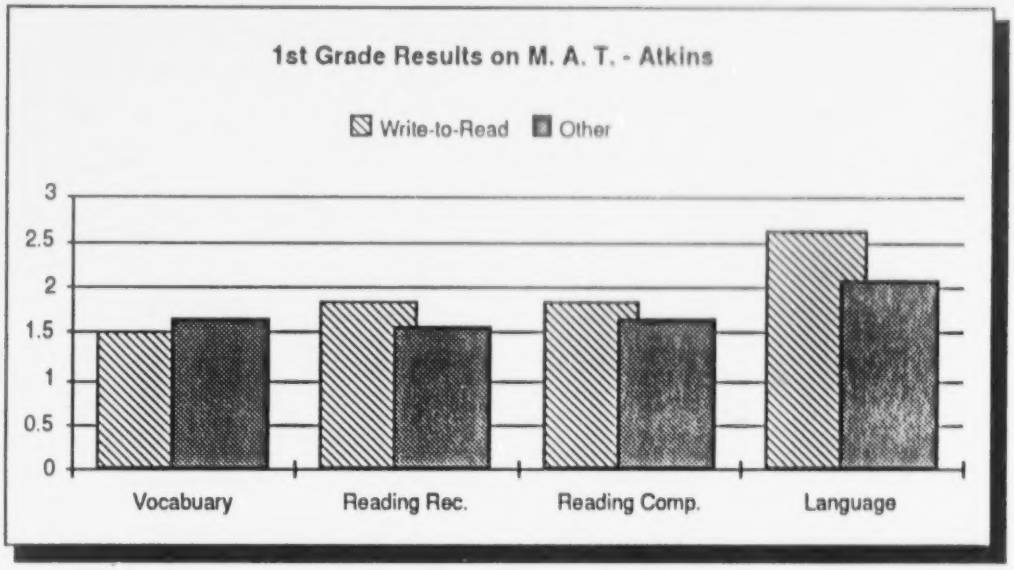
Hypothesis 2:

Writing-to-Read Groups vs the Other Group:



The classrooms were grouped into two groups: The Writing-to-Read Group (two classrooms) and Other (four classrooms). This tests the scores of the children who had the Writing-to-Read experience (N=37) vs the children (N = 54) who did not. The results showed a significant difference between groups (p = .0061) and on the Language subtest (<.01). Although the Writing-to-Read Group scored higher on reading recognition and reading comprehension, the differences were not significant.

DISCUSSION:

The results of the ANOVA accept Hypothesis 3 for language development but not for vocabulary, reading recognition, or reading comprehension. These results apparently hold true through third grade as the comparison of Newton-Smith and Pine Grove indicates.

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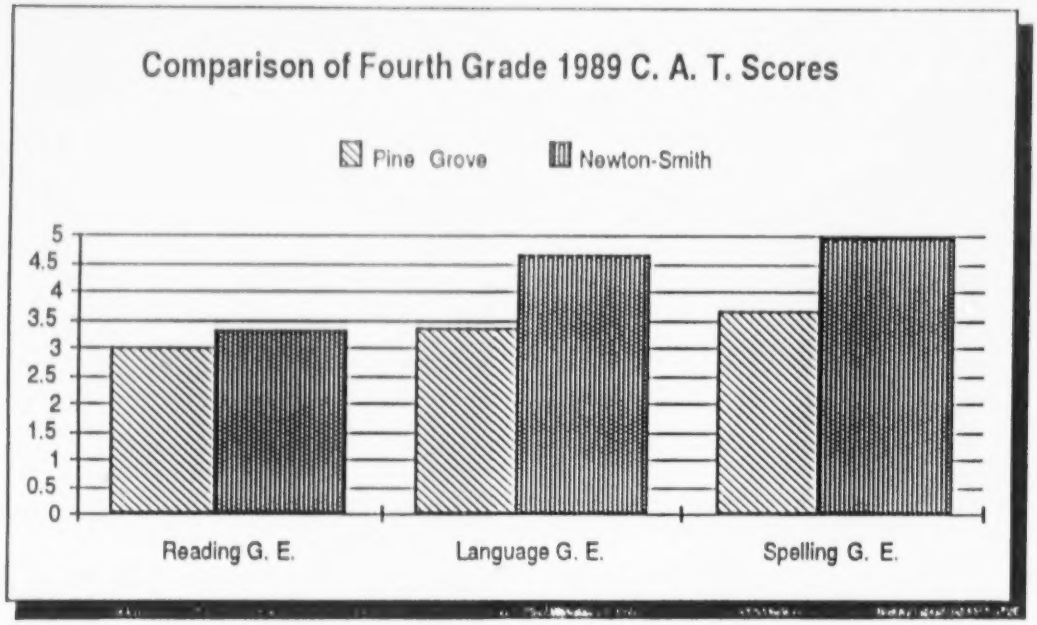
Hypothesis 3:



Reading:

The mean reading score or both schools was below grade level (Pine Grove = 3.02; Newton-Smith = 3.343) and the difference between the two is not significant.

Language:

Newton-Smith third graders significantly (<.0263) outperformed Pine Grove third graders with a difference in mean of 1.293 grade levels. Pine Grove third graders had a mean language score of 3.369 grade equivalent and Newton-Smith third graders had a 4.662 mean language score.

Spelling:

Newton-Smith third graders significantly (<.0016) outperformed Pine Grove third graders with a mean of 4.961 compared to 3.693.

DISCUSSION:

Hypothesis 2 is rejected for overall reading level; however, hypothesis 2 is accepted for language and spelling. It should be noted that Pine Grove third graders scored adequately at grade level in language and spelling, but Newton-Smith children scored exceptionally well with a grade equivalent of 4.6 and 4.9 respectively.

Why did both schools score below grade level in reading? This is a question

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that should be examined in light of this evidence. The low score in reading may be a result of the skills oriented approach of the reading curriculum in the school district. The 1977 Harper Row Basal Readers still in use in this school district encourage teaching skills in isolation rather than as part of a natural learning process which embodies writing as a process, invented spelling, and language development.

The Writing-to-Read computer program is based on invented spelling, writing composition, and the process writing approach which are part of the philosophy of the whole language approach. Consequently, the two approaches are at odds with each other. Hopefully, with the new reading series that has been adopted and the movement toward whole language activities being incorporated in the language arts curriculum, reading scores will improve.

CONCLUSIONS:

The Writing-to-Read Program has proven to produce significant gains in language and spelling which hold up over time. However, it does not seem to influence reading ability. Traditionally, poor language skills have been seen as a detriment to normal development in reading yet the children in this study have strong language scores.

Since language skills are not the problem, then the curriculum should be critically examined. The emphasis of the current reading curriculum has been strongly skills oriented while the Writing-to-Read Program is based on the whole language approach. Unless the classroom teacher has a whole language philosophy, there will be little, if any, carry over from what is learned in the Writing-to-Read Lab to reading instruction in the classroom. Indeed, as the evaluator visited the Writing-to-Read Labs and talked with classroom teachers this was their main concern.

The Writing-to-Read Program is motivating to young children. They enjoy working at a computer which gives them a sense of control over their own learning. They compose stories and experiment with language and spelling every day. Consequently, their language development increases and their spelling improves, and, as this research proves, these gains hold up over time.

If these same children had a whole language start in reading instruction beginning in kindergarten with shared reading in Big Books, language experience activities in the classroom, and all the other activities this approach entails, these childrens' scores in reading should improve dramatically. As a result, the Writing-to-Read Program would fit very nicely into the reading curriculum.

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FURTHER RECOMMENDATIONS FOR RESEARCH:

It would be useful to compare the California Achievement Test Scores of the Chapter 1 students who do not have the Writing-to-Read Program at their schools with the children who have completed the program. This would provide larger numbers to work with and increase the validity of this study.

It is also recommended that a pilot study be designed to compare the test scores of students who go to Writing-to-Read Labs and have reading instruction in the new HBJ reading series (to be implemented in the Fall of 1990) with a school where a whole language approach is used in kindergarten. It is a fact that Black children have made slower progress in learning to read in the basal reader approach to teaching reading. It is logical that a drastic change such as this recommendation suggests is in order. This would provide the school district with valuable information for planning future curriculum changes to improve the reading ability of its low income, Black children.

It is recommended that the students tested this year both at first and third grade levels continue to be followed through their school years. It is important to see if these gains hold up over time and to see if their reading skills improve, decline, or remain stable when the new reading series is implemented.

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